



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D212-664-101
Job Sheet 199238



Part No: D212-664-101

Job Qty: 1 pcs

Part Name: Fwd Crosstube - High



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 8/15/19

Job Tracking No:

Due Date: 9/17/19

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: D212-664-141 REV E/ IIN-D212-664 REV.J IPP Rev:E 04.02.16 Reformat KJ/DS IPP Rev:F 06-03-29 Remove Comments on Pick List JLM IPP Rev:G 07-04-30 As per Rev C JLM IPP Rev:H 11.04.26 inspection strip ecn 11-549 EC verf by:DD IPP REV:I 14.05.27 AS PER ECN 14-570 DD VERF:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier	Sign-off
					Setup Hrs	Run Hrs		
120	Crosstubes - Bend - 1	1 pcs	9/17/19	9/17/19	0.50	1.00	Crosstubes - Bend	BB 8/26/2019
130	QC 15	1 pcs	9/17/19	9/17/19	0.00	0.00	QC 15 - 12	
							QC 15 - 3	
							QC 15 - 47	
							QC 15 - 49	
							QC 15 - 58	
							QC 15 - 9	
							QC 15 - 68	
140	Crosstubes - 2 - B4B	1 pcs	9/17/19	9/17/19	0.00	1.00	Crosstubes - 1 - B4B	AUG 26 2019 DAS 68
							Crosstubes - 2 - B4B	BB 8/27/2019 9-89
							Crosstubes - 3 - B4B	
							Crosstubes - 4 - B4B	
150	Crosstubes - 3 - B4B	1 pcs	9/17/19	9/17/19	0.00	0.50	Crosstubes - 1 - B4B	
							Crosstubes - 2 - B4B	
							Crosstubes - 3 - B4B	BB 9/19/2019
							Crosstubes - 4 - B4B	
160	QC 7	1 pcs	9/17/19	9/17/19	0.00	0.00	QC 7 - 10	
							QC 7 - 13	
							QC 7 - 14	
							QC 7 - 15	
							QC 7 - 17	
							QC 7 - 18	
							QC 7 - 19	
							QC 7 - 2	
							QC 7 - 28	
							QC 7 - 3	
							QC 7 - 30	
							QC 7 - 34	
							QC 7 - 36	
							QC 7 - 37	

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				QC 7 - 41	
				QC 7 - 47	
				QC 7 - 48	
				QC 7 - 51	
				QC 7 - 58	
				QC 7 - 59	
				QC 7 - 60	
				QC 7 - 9	
				QC 7 - 68	
				QC 7 - 50	
				QC 7 - 67	SP 19-09-19.
				QC 7 - 40	
				QC 7 - 24	
				QC 7 - 43	
				QC 7 - 61	
				QC 7 - 81	
165	QC 5	1 pcs	9/17/19	0.00 0.00	QC 5 - 10
					QC 5 - 12
					QC 5 - 17
					QC 5 - 18
					QC 5 - 19
					QC 5 - 22
					QC 5 - 24
					QC 5 - 3
					QC 5 - 43
					QC 5 - 49
					QC 5 - 51
					QC 5 - 58
					QC 5 - 68
					QC 5 - 9
					QC 5 - 50
					QC 5 - 30
					QC 5 - 40
					QC 5 - 61
					QC 5 - 81
170	Outsource - 2 - NDT per QSI038	1 pcs	9/17/19		SKY002-VC
					PL 09/20/2019
180	Packaging 2-1 - Receive - B4B	1 pcs	9/17/19	0.00 0.00	Packaging 2 - 1 - B4B
					Packaging 2 - 2 - B4B
					Packaging 2 - 3 - B4B
					Packaging 2 - 5 - B4B
					Packaging 2 - 4 - B4B
					Packaging 2 - 6 - B4B
					Packaging 2 - 7 - B4B
					Packaging 2 - 8 - B4B
					Packaging 2 - 9 - B4B
					Packaging 2 - 10 - B4B
					Packaging 2 - 11 - B4B
					Packaging 2 - 12 - B4B
					Packaging 2 - 13 - B4B
					Packaging 2 - 14 - B4B
					Packaging 2 - 15 - B4B
					Packaging 2 - 16 - B4B
					Packaging 2 - 17 - B4B
					Packaging 2 - 18 - B4B
					Packaging 2 - 19 - B4B
					Packaging 2 - 20 - B4B
					Packaging 2 - 21 - B4B
					Packaging 2 - 22 - B4B

SP 19-09-19.

SEP 19 2019 68
9.82

SEP 20 2019

					Packaging 2 - 23 - B4B	
					Packaging 2 - 24 - B4B	
					Packaging 2 - 25 - B4B	
					Packaging 2 - 26 - B4B	
					Packaging 2 - 27 - B4B	
					Packaging 2 - 28 - B4B	
					Packaging 2 - 29 - B4B	
					Packaging 2 - 30 - B4B	
					Packaging 2 - 31 - B4B	
					Packaging 2 - 32 - B4B	
					Packaging 2 - 33 - B4B	
					Packaging 2 - 34 - B4B	
					Packaging 2 - 35 - B4B	
					Packaging 2 - 36 - B4B	
190	QC 5	1 pcs	9/17/19	0.00 0.00	QC 5 - 10	
					QC 5 - 12	
					QC 5 - 17	
					QC 5 - 18	
					QC 5 - 19	
					QC 5 - 22	
					QC 5 - 24	
					QC 5 - 3	
					QC 5 - 43	
					QC 5 - 49	
					QC 5 - 51	
					QC 5 - 58	
					QC 5 - 68	
					QC 5 - 9	
					QC 5 - 50	
					QC 5 - 30	
					QC 5 - 40	SEP 23 2019 40 9.89
					QC 5 - 61	
					QC 5 - 81	
200	Spray Paint - 2 - B4B	1 pcs	9/17/19	0.00 0.25	Spray Paint - 1 - B4B	AL 19-9-23
					Spray Paint - 2 - B4B	
					Spray Paint - 3 - B4B	
					Spray Paint - 4 - B4B	
210	QC 14	1 pcs	9/17/19	0.00 0.00	QC 14 - 15	
					QC 14 - 2	
					QC 14 - 34	
					QC 14 - 41	
					QC 14 - 51	
					QC 14 - 58	
					QC 14 - 59	
					QC 14 - 9	
					QC 14 - 68	SEP 24 2019 58 9.89
					QC 14 - 40	
					QC 14 - 19	
					QC 14 - 43	
					QC 14 - 24	
					QC 14 - 61	
					QC 14 - 81	
220	Crosstubes - 4 - B4B	1 pcs	9/17/19	0.00 1.69	Crosstubes - 1 - B4B	
					Crosstubes - 2 - B4B	RO 19-9-24
					Crosstubes - 3 - B4B	
					Crosstubes - 4 - B4B	
230	QC 5	1 pcs	9/17/19	0.00 0.00	QC 5 - 10	
					QC 5 - 12	
					QC 5 - 17	

					QC 5 - 18	
					QC 5 - 19	
					QC 5 - 22	
					QC 5 - 24	
					QC 5 - 3	
					QC 5 - 43	
					QC 5 - 49	
					QC 5 - 51	
					QC 5 - 58	
					QC 5 - 68	DAS SEP 27 2018
					QC 5 - 9	9-89
					QC 5 - 50	
					QC 5 - 30	
					QC 5 - 40	
					QC 5 - 61	
					QC 5 - 81	
240	Packaging 1-1 - Pick Kit - B4B	1 pcs	9/17/19	0.00 0.00	Packaging 1 - 1 - B4B	
					Packaging 1 - 2 - B4B	
					Packaging 1 - 3 - B4B	
					Packaging 1 - 4 - B4B	
					Packaging 1 - 5 - B4B	DAS 74 9-89
					Packaging 1 - 6 - B4B	
					Packaging 1 - 7 - B4B	
					Packaging 1 - 8 - B4B	
					Packaging 1 - 9 - B4B	
					Packaging 1 - 10 - B4B	
					Packaging 1 - 11 - B4B	
					Packaging 1 - 12 - B4B	
					Packaging 1 - 13 - B4B	
					Packaging 1 - 14 - B4B	
					Packaging 1 - 15 - B4B	
					Packaging 1 - 16 - B4B	
					Packaging 1 - 17 - B4B	
					Packaging 1 - 18 - B4B	
					Packaging 1 - 19 - B4B	
					Packaging 1 - 20 - B4B	
					Packaging 1 - 21 - B4B	
					Packaging 1 - 22 - B4B	
					Packaging 1 - 23 - B4B	
					Packaging 1 - 24 - B4B	
					Packaging 1 - 25 - B4B	
					Packaging 1 - 26 - B4B	
					Packaging 1 - 27 - B4B	
					Packaging 1 - 28 - B4B	
					Packaging 1 - 29 - B4B	
					Packaging 1 - 30 - B4B	
					Packaging 1 - 31 - B4B	
					Packaging 1 - 32 - B4B	
					Packaging 1 - 33 - B4B	
					Packaging 1 - 34 - B4B	
					Packaging 1 - 35 - B4B	
					Packaging 1 - 36 - B4B	
250	QC 4	1 pcs	9/17/19	0.00 0.00	QC 4 - 28	
					QC 4 - 58	
					QC 4 - 69	
					QC 4 - 9	
					QC 4 - 46	
					QC 4 - 68	
					QC 4 - 72	

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260	Packaging 3-1 - Stock - B4B	1 pcs	9/17/19	0.00	0.00	QC 4 - 74	DAS
						QC 4 - 75	78
						Packaging 3 - 1 - B4B	9-89
						Packaging 3 - 2 - B4B	
						Packaging 3 - 3 - B4B	
						Packaging 3 - 4 - B4B	
						Packaging 3 - 5 - B4B	
						Packaging 3 - 6 - B4B	
						Packaging 3 - 7 - B4B	
						Packaging 3 - 8 - B4B	
						Packaging 3 - 9 - B4B	
						Packaging 3 - 10 - B4B	
						Packaging 3 - 11 - B4B	
						Packaging 3 - 12 - B4B	
						Packaging 3 - 13 - B4B	
						Packaging 3 - 14 - B4B	
						Packaging 3 - 15 - B4B	
						Packaging 3 - 16 - B4B	
						Packaging 3 - 17 - B4B	
						Packaging 3 - 18 - B4B	
						Packaging 3 - 19 - B4B	
						Packaging 3 - 20 - B4B	
						Packaging 3 - 21 - B4B	
						Packaging 3 - 22 - B4B	
						Packaging 3 - 23 - B4B	
						Packaging 3 - 24 - B4B	
						Packaging 3 - 25 - B4B	NC
						Packaging 3 - 26 - B4B	
						Packaging 3 - 27 - B4B	
						Packaging 3 - 28 - B4B	
						Packaging 3 - 29 - B4B	
						Packaging 3 - 30 - B4B	
						Packaging 3 - 31 - B4B	
						Packaging 3 - 32 - B4B	
						Packaging 3 - 33 - B4B	
						Packaging 3 - 34 - B4B	
						Packaging 3 - 35 - B4B	
						Packaging 3 - 36 - B4B	DAS
265	DC - 1 - B4B	1 pcs	9/17/19	0.00	0.00	DC - 1 - B4B	21
						DC - 2 - B4B	9-89
270	QC 21 - FG	1 pcs	9/17/19	0.00	0.00	QC 21 - FG - 21	DAS
						QC 21 - FG - 70	21
						QC 21 - FG - 53	9-89

Part Op 120 - Bend tube as per Dwg D212-664-141 using CNC bender program 212-fw and Folio D212-664-101 OCT 02 2019

Descriptions: 130 - (QC15- Crosstube Dimensional Check)

140 - "1-Drill pilot holes in tube as per Dwg D212-664-141 using drill Jig DT8548 & DT8549, using drill table DT8577, set-up towers in hole #7 as per QSI 10 2-Ream hole to finish size in tube as per Dwg D212-664-141 using drill Jig DT8548 & DT8549. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes. 3-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-141 4-*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-141"

150 - HandFinish5 (Crosstubes Chemical Conversion) ***IMMEDIATELY AFTER GRINDING***

160 - (QC7-Inspect Chemical Conversion Coat)

165 - QC5- Inspect part completeness to step on W/O)

170 - *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order

180 - (Receive & Inspect for Damage & Mat'l Certs) Ensure copy of NDT results attached to work order.

190 - (QC5- Inspect part completeness to step on W/O) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for damage & ensure results are as per Dwg D212-664-141

200 - (Spray Paint / NDT Room) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 1-Prime inside & outside crosstube as per QSI 005 4.2 BATCH: 5189223 2- After painting remove masking and apply matte clear coat per QSI005 4.2 3- MASK UNDERSIDE OF CROSSTUBE AS SHOWN ON DWG BEFORE PAINTING 4 -Paint Outside of Tube as per Dart QSI 005 4.2 clear 5189743 Paint 5204428

210 - (QC14- Inspect Spray Paint) Then, Wrap in plastic bag to protect from scratches

220 - *****LAY DOWN CROSSTUBE ON TABLE AND PUT DT10302 PINS IN SADDLE HOLE FACING UP, USE HOLE IN TAPE MESURE TO PUT IN PINS FOR LOCATING CENTER OF CROSSTUBE. ***** 1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg 2- Install supports with Proseal 890 per D212-664-141 and QSI 015 A/R Proseal 890 Batch: 5176610 EXP: 19/10

PROSEAL CURE TIME 72 HOURS: Start: 19-9-24 Finish: 19-9-27 3- Install clamps with rubber cushion (ENSURE CLAMPS ARE INSTALL ON TOP SIDE OF CROSSTUBE) using DT9565 as per Dwg D212-664-141. ***Torque all clamps to 80-100 IN-LBS.***

230 - (QC5- Inspect part completeness to step on W/O) ***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.***

240 - (Pick Kit)

250 - QC4- 100% Inspect kits for completeness) ***VERIFY BY _____ BATCH # TO MATCH W/O

260 - (Identify as per dwg & Stock Location: _____) Identify and pack for shipping as per PPP D212-664-101 Location : FG094

265 - Photocopy bluefile and create labels as per PPP D212-664-101 CHG006

270 - (QC21- Final Inspection - Work Order Release)

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D212-664-101TRN	Crosstube Turning Detail	1 pcs (1 ea)	120-Crosstubes - Bend - 1	S 184944
D2893-1	Support	2 pcs (2 ea)	220-Crosstubes - 4 - B4B	
D3595-063-450	Rubber Cushion 0.63" Wide X 4.50" Long	4 pcs (4 ea)	220-Crosstubes - 4 - B4B	
MS21920-25	Clamp	4 Ea (4 ea)	220-Crosstubes - 4 - B4B	
AN6-35A	Bolt	4 Ea (4 ea)	240-Packaging 1-1 - Pick Kit - B4B	518443613 5089337x1
AN6-36A	Bolt	4 Ea (4 ea)	240-Packaging 1-1 - Pick Kit - B4B	5140404
D3428-1	Placard	1 pcs (1 ea)	240-Packaging 1-1 - Pick Kit - B4B	5140317
MS21042L6	Nut	6 Ea (6 ea)	240-Packaging 1-1 - Pick Kit - B4B	514244512 5167655x4
NAS1149D0663J	Washer	18 Ea (18 ea)	240-Packaging 1-1 - Pick Kit - B4B	5167525

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
120-Crosstubes - Bend - 1	D212-664-101TRN	1	4	0
220-Crosstubes - 4 - B4B	D2893-1	② 5184436	24	0
	D3595-063-450	④ 5196511	37	0
	MS21920-25	④ 5183336	103	0
240-Packaging 1-1 - Pick Kit - B4B	AN6-35A	4	31	0
	AN6-36A	4	25	0
	D3428-1	1	15	0
	MS21042L6	6	244	0
	NAS1149D0663J	18	588	0

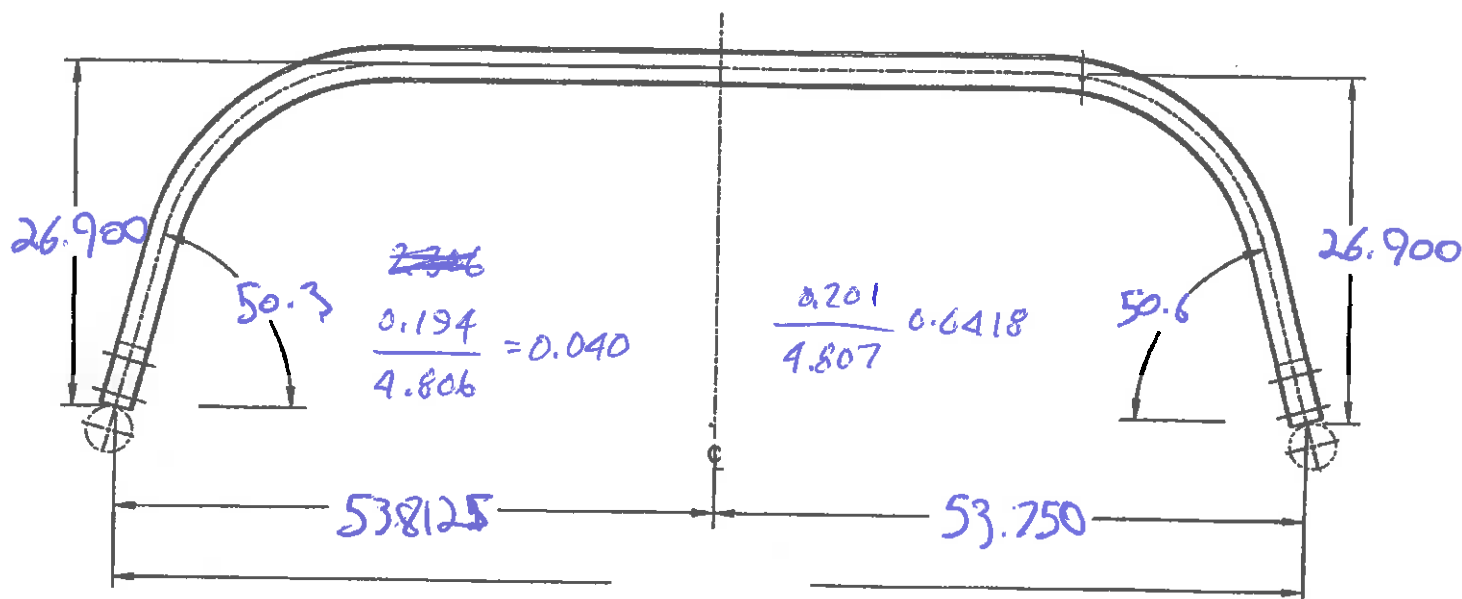
Part Specifications

Specifications could not be found.

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DART AEROSPACE LTD		Work Order:	199238
Description: Crosstube High Fwd (205/212/412)		Part Number:	D212-664-101
Inspection Dwg: D212-664-141	Rev: E	Page 1 of 1	

Required Dimension	Min	Max
Height	26.67	27.17
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.7
Bending Passes	3	--
Crushing	--	7.2%



2.306
2.500

	Side A	Side B
Bending Passes		
Crushing	4.0%	4.2%
Comments		

2.303
2.504

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	08.04.21	Dwg Rev updated	KJ/JM	
C	10.04.01	Dwg Rev updated	KJ	
D	12.04.16	Added bending, crushing dimensions	KJ	
E	14.07.28	Revised max crushing %	KJ	
F	16.01.15	Revised Height min/max dimensions	KJ	

Item	Qty -141	Qty -141B	Qty -141F	Part Number	Description
1	X			D212-884-141	CROSSTUBE ASSEMBLY (206212/412 HIGH FWD)
2		X		D212-884-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3			X	D212-884-141F	CROSSTUBE ASSEMBLY (206212/412 HIGH FWD) (ANODIZED)
4	1	1	1	D6006-128	CROSSTUBE
5	2	2	2	D2883-1	SUPPORT
6	4	4	4	D3695-083-450	RUBBER CUSHION
7		2		D6017-1	SUPPORT
8	4	4	4	MS21820-25	CLAMP (OR MS21820-26)
9	AR	AR	AR	PROSEAL 890 B-2	SEALANT, AMS-S-8902 CLASS B-2

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6005-128
- FINISH -141 & -141B: a) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
b) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
c) MASK INSIDE OF CROSSTUBE AS SHOWN (ZN C8-2 / C8-3, HATCHED AREA)
d) PAINT OUTSIDE PER DART QSI 005 4.2
e) REMOVE MASKING AND APPLY MATTE CLEAR COAT
- FINISH -141F: a) ANODIZE PER MIL-A-8825, TYPE II, CLASS 1.
b) ALODINE (DO NOT ETCH) PER QSI 005 4.1.2
c) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
d) MASK INSIDE OF CROSSTUBE AS SHOWN (ZN C8-2 / C8-3, HATCHED AREA)
e) PAINT OUTSIDE PER DART QSI 005 4.2
f) REMOVE MASKING AND APPLY MATTE CLEAR COAT
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D212-884-XXX" AND BATCH NUMBER ON INSIDE OF CLIFF USING VIBRATING STYLUS
- WEIGHT: D212-884-141/-141B/-141F = 33.6 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

MACHINING

- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.

BENDING

- BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7.2% (BASED ON O.D.) IN LOWER HALF OF R36.6 BEND AND 6% (BASED ON O.D.) ON REMAINING TUBE.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

ASSEMBLY

- TO INSTALL D2883-1 / D6017-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8902 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- INSTALL MS21820-25 CLAMPS (OR -26) WITH D3695-083-450 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
- TORQUE CLAMPS 80 TO 100 IN-LBS. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

SHOP COPY
RETURN TO
(100) (100) (100)

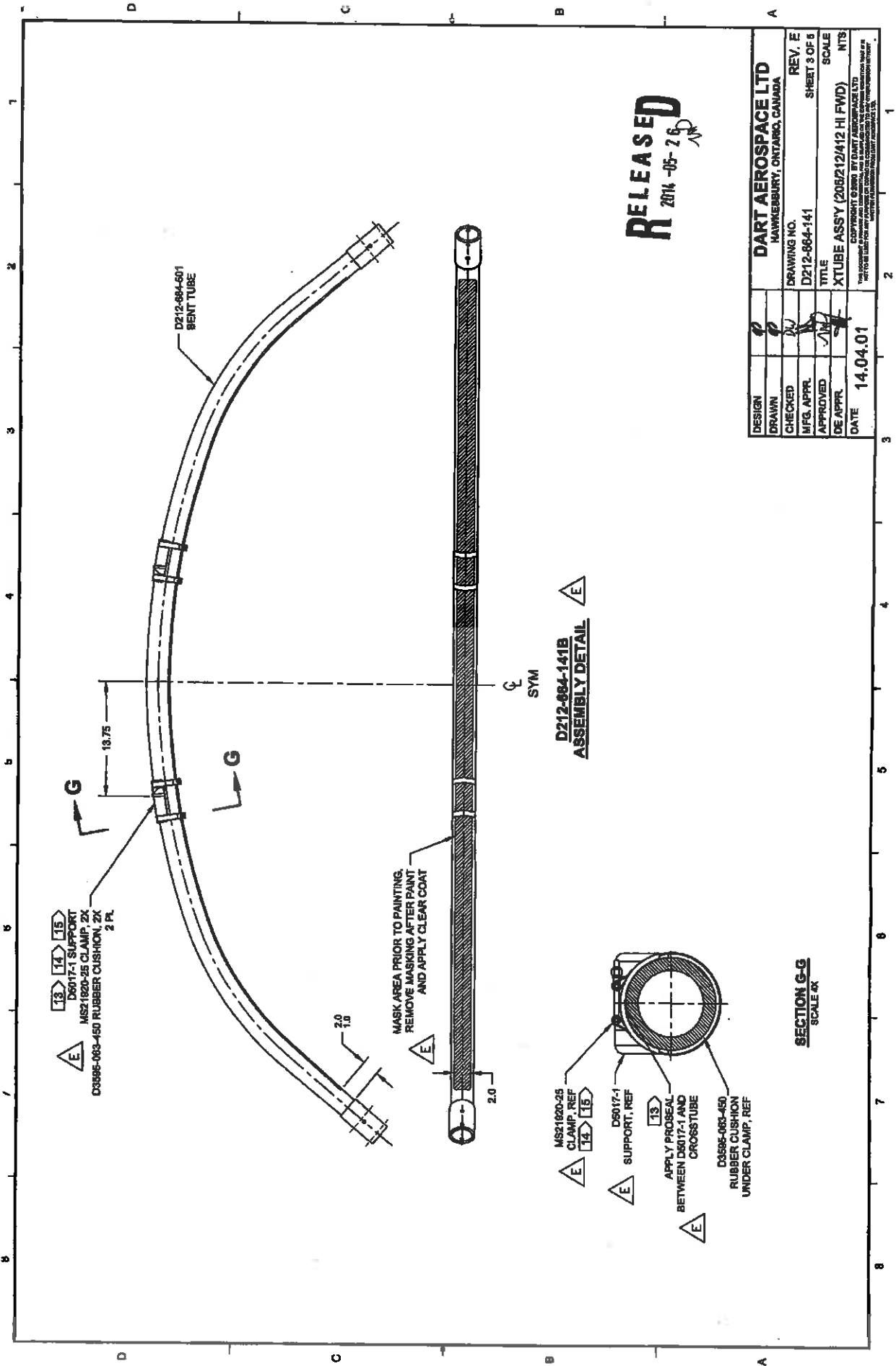
UNCONTROLLED COPY

WEEK ORDER

199-238 HUS
19-08-15

RELEASED
2014-05-26

REV.	DESCRIPTION	BY	DATE
E	ADD -141F D6017-1 WAS D6005-1 (-141B) PROSEAL WAS MAGNOSON. NOTE 2: ADD SECTION 11: ALLOW 7.2% CRUSH. NOTE 3: ADD SECTION 12: CUFF AND RETORQUE FOR PROSEAL. ADD SHEET CLAMPS REVERSED TO PREVENT CHAIRING (B7-2, B7-3) BEND HEIGHT TOL. NOW 0.28 WAS 0.13 (C1-3). INCORP. DED D-12/23	CP	14-04-01
D	REFORMAT/REUSE GENERAL NOTES/PART LIST. REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. ADD -141B (ZN B4-3, D4-2). REMOVED REF. & ADD TOLERANCES (ZN B4-3, C8-3, C8-3 & B8-3). RELOCATED FLAG #6 PER PAR 98-046 (ZN A4-3). MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	06-08-30
C	REMOVE .551 ABRASION STRIP; ADD MAGNOSON. 5585. CUSHION, REVERSE CLAMPS.	PH	07-03-08
B	ADD HOLES FOR COMPATIBILITY WITH BHT/AA BRIDGES	PH	06-02-04
A	NEW ISSUE	CP	06-12-12
DESIGN			
DRAWN			
CHECKED			
MG. APPR.			
APPROVED			
DE APPR.			
DATE	14.04.01		
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA			
DRAWING NO. D212-884-141			
TITLE XTUBE ASSY (206212/412 HI FWD)			
SHEET 1 OF 5			
SCALE			
NTB			



D212-684-141B
ASSEMBLY DETAIL

SECTION G-G
SCALE 4X

DESIGN	0	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D212-864-141 TITLE XTUBE ASSY 208/212/412 HI FWD) SCALE NTS COPYRIGHT © 2000 DART AEROSPACE LTD This document is a private and confidential document and is meant for the use of the customer only. It is not to be distributed outside the company without the written consent of DART Aerospace Ltd.
DRAWN	0	
CHECKED	DW	
MFG. APPR.	<i>[Signature]</i>	
APPROVED	<i>[Signature]</i>	
DATE	14.04.01	DE APPR.



D212-864-141TRN
TURNING DETAIL



DESIGN	00	DART AEROSPACE LTD HAMMERSBURY, ONTARIO, CANADA	
DRAWN	00		REV. E
CHECKED	00	DRAWING NO.	SHEET 6 OF 6
APPROVED	00	D212-684-141	SCALE
DE APPR.	00	TITLE	NTS
DATE	14.04.01	XTUBE ASSY (205/12/412 HI FWD)	

RELEASED
2014-05-26

Entered: _____ Date: _____

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐		DEPARTMENT/PROCESS		MRB (QS1042)	
Date : _____ Sequence #: _____		QTY Affected : _____		Disposition			
Description Work Order Deviation		Completed By					
Lead hand / Supervisor		QC / QA Coordinator					

Root Cause		FAULT CATEGORY									
Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐	Pressure/Forced	☐	Contamination	☐	Power Loss/Surge	☐	Positioned Wrong	☐			
	Bending	☐	Misaligned/off center	☐	Folio/Program	☐	Outside Tolerance	☐			
	Crushing	☐	BOM/Route	☐	Grain Direction	☐	Drawing	☐			
	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Finish	☐			
	Crimp/Kink/Ripple/Wave/Twist	☐	Incomplete/Unclear Instructions	☐	Wrong Stock Pulled	☐	Part Lost/Missing	☐			
	Marks/Chatter	☐	Drill Holes	☐	Out of Sequence	☐	Misread	☐			
Mislabeled	☐	Fit/Function	☐	Off-set/Set-up	☐						
Other/Details:											



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044535



Supplier: SKY002-VC
Skyservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

Attention: Jenne, Heather

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: POHB044535

PO Date: 9/19/19

Due Date: 9/20/19

**Purchase Order
Revision:**

Revision Date:

Ship-To Contact: Phone:

Via: Ground

Pymt Terms: Net 30

Freight Terms:

Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	196105	D206-667-103	Fwd Crosstube - High 206L / L1 / L3 / L4 : TC STC SH01-5 Issue 3, FAA STC SR01304NY 05/12/15, JCAB JAPAN STC-32-OSA 02/02/28, EASA STC EASA.IM.R.S.01179 06/07/03, BRAZIL 2009S08-16 09/08/25, BRAZIL 2009S08-17 09/08/25 Outsource process - NDT per QSI038 4.1 - *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***	Firmed - XI		9/20/19	1 pcs	0 pcs	1 pcs	\$152.50/pcs	\$152.50 DP
2	196106	D206-667-103	Fwd Crosstube - High 206L / L1 / L3 / L4 : TC STC SH01-5 Issue 3, FAA STC SR01304NY 05/12/15, JCAB JAPAN STC-32-OSA 02/02/28, EASA STC EASA.IM.R.S.01179 06/07/03, BRAZIL 2009S08-16 09/08/25, BRAZIL 2009S08-17 09/08/25 Outsource process - NDT per QSI038 4.1 - *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***	Firmed - XI		9/20/19	1 pcs	0 pcs	1 pcs	\$152.50/pcs	\$152.50 DP



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PURCHASE ORDER

POHB044535



Items											
Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
3	200061	D206-667-207BL	Aft Crosstube - Mid Height 206L / L1 / L3 / L4, Blue : TC STC SH01-5 Issue 3, FAA STC SR01304NY 05/12/15, JCAB JAPAN STC-32-OSA 02/02/28, EASA STC EASA.IM.R.S.01179 06/07/03, BRAZIL 2009S08-16 09/08/25, BRAZIL 2009S08-17 09/08/25 Outsource process - NDT per QSI038 4.1 *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038Or Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	9/20/19	1 pcs	0 pcs	1 pcs	\$152.50/pcs	\$152.50
				XI			SEP 20 2019				DP
4	200062	D206-667-207BL	Aft Crosstube - Mid Height 206L / L1 / L3 / L4, Blue : TC STC SH01-5 Issue 3, FAA STC SR01304NY 05/12/15, JCAB JAPAN STC-32-OSA 02/02/28, EASA STC EASA.IM.R.S.01179 06/07/03, BRAZIL 2009S08-16 09/08/25, BRAZIL 2009S08-17 09/08/25 Outsource process - NDT per QSI038 4.1 *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038Or Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	9/20/19	1 pcs	0 pcs	1 pcs	\$152.50/pcs	\$152.50
				XI			SEP 20 2019				DP
5	199238	D212-664-101	Fwd Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	9/20/19	1 pcs	0 pcs	1 pcs	\$152.50/pcs	\$152.50
				XI			SEP 20 2019				DP



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Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044535



Items											
Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
6	99239	D212-664-101	Fwd Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA- 316/2015 15/06/17 *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	9/20/19	1 pcs	0 pcs	1 pcs	\$152.50/pcs	\$152.50
Grand Total:											\$915.00

Order Notes

Procurement Quality Clauses

A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing
A024 process certifications
A026 certification of material conformance

A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 9/20/19 2:05 PM dart.lussier.patrick

**skyservice****Work Order Traveler**
Sky Service F.B.O. Inc.

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO41837	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: POHB044535
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON:

DAS
40
9-89

2 FWD CROSSTUBES , P/N: D212-664-101 , J/S: 199238 , 199239

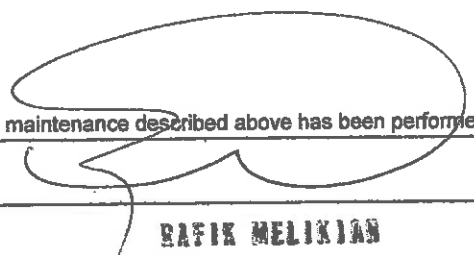
2 AFT CROSSTUBES , P/N: D206-667-207BL , J/S: 200061 , 200062

2 FWD CROSSTUBES , P/N: D206-667-103 , J/S: 196105 , 196106

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-16						SEP 20 2019	 
NO CRACK FOUND							
PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923 , DEV. MPO11715 , UV LIGHT M-20142							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

RECEIVED
SEP 20 2019
DART AEROSPACE LTD.

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:		ACA/SCA Stamp	Date:
Name: RAFIK MELIKIAN			SEP 20 2019

5.0 PARTS LIST

5.1 HIGH GEAR CROSSTUBES

Item	QTY -100	QTY -201	QTY -203	Part Number	Description
	X			D212-664-101	CROSSTUBE INSTALLATION, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
		X		D212-664-201	CROSSTUBE INSTALLATION, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
			X	D412-664-203	CROSSTUBE INSTALLATION, 412 HIGH AFT
1	1			D212-664-141	CROSSTUBE ASSEMBLY, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
2		1		D212-664-241	CROSSTUBE ASSEMBLY, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
3			1	D412-664-243	CROSSTUBE ASSEMBLY, 412 HIGH AFT
10	2			* D2893-1	SUPPORT
11	4			* D3595-063-450	RUBBER CUSHION
12	4			* MS21920-25	CLAMP (OR MS21920-26)
13	2			AN6-35A	BOLT
14	4			AN6-36A	BOLT
15	6			MS21042L6	NUT (OR MS21042-6)
16	18			AN960JD616	WASHER
20		2		* D2940-1	SUPPORT
21		4		* D3595-063-530	RUBBER CUSHION
22		4		* MS21920-28	CLAMP (OR MS21920-30)
23		4		AN6-40A	BOLT
24		2		AN6-41A	BOLT
25		6		MS21042L6	NUT (OR MS21042-6)
26		18		AN960JD616	WASHER
30			1	* D2896-1	SUPPORT
32			2	* D3595-063-570	RUBBER CUSHION
33			4	* MS21920-28	CLAMP
34			2	* MS21920-30	CLAMP (OR MS21920-32)
35			4	AN6-40A	BOLT
36			2	AN6-41A	BOLT
37			6	MS21042L6	NUT (OR MS21042-6)
38			18	AN960JD616	WASHER
39			2	* D3189-1	CHAFING SHIELD
50	1	1		D3428-1	PLACARD

* REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-141/-241 OR D412-664-243 ASSEMBLIES ABOVE.

NOTE: KITS INCLUDE EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND BELL/AAI SKIDTUBES.